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19. A method of forming a polycrystalline silicon layer, comprising:

forming an amorphous silicon layer on a substrate;

melting said amorphous silicon layer using a laser beam so as to form a polycrystalline silicon layer; and

re-melting an upper portion of said polycrystalline silicon layer using a laser beam so as to re-crystallize said upper portion,

wherein said melted amorphous silicon layer and said polycrystalline silicon layer of which upper portion is re-melted exist at the same time during at least a certain time period of the formation of the polycrystalline silicon layer.

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The non-final Office Action of October 7, 2002 has been received and contents carefully reviewed.

By this Amendment, Applicant amends claims 1 and 7 and adds claims 18 and 19. Accordingly, claims 1-12 and 18-19 are currently pending in the present application. Reexamination and reconsideration of the application, as amended, in view of the following remarks are respectfully requested.

Applicant herewith submits a Drawing Change Authorization Request. In the drawings as originally filed, four legends (Fig. 1A, Fig. 1B, Fig. 1C, and Fig. 2) appeared on the first sheet, but the only three figures were shown on the first sheet. Original Fig. 1B was inadvertently omitted. In a previous drawing correction request, Applicant requested that

originally numbered Fig. 1C be renumbered to be Fig. 1B, thus the second figure on the first sheet was assumed to be Fig. 2. By the Drawing Change Authorization Request, Applicant moves the renumbered Fig. 1B to again be numbered as Fig. 1C, and adds new Fig. 1B.

Applicant submits that the addition of Fig. 1B does not add new matter to the present application, as this figure was submitted in Korean patent application No. 1999-67846, which was incorporated by reference in its entirety into the present application. Moreover, Fig. 1B was described in the originally filed specification at page 3, lines 12-17 and page 7, lines 13-14. Applicant hereby makes the appropriate amendments to the specification to return the necessary references to Fig. 1B, which were removed by the preliminary amendment and substitute specification filed on February 23, 2001.

In the Office Action dated October 7, 2002, the Examiner states "claims 1-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kuwabara (JP 409283441) in further view of the admitted prior art."

The rejection of claims 1-12 under 35 U.S.C. §103(a) as being unpatentable over Kuwabara is respectfully traversed and reconsideration is requested.

Applicant respectfully submits that independent claim 1 as amended is allowable over the cited art in that claim 1 recites a combination of elements including, for example "at least some of said melting of said upper portion of said polycrystalline silicon layer is performed as said amorphous silicon layer is melted." None of the cited references including Kuwabara, singly or in combination, teaches or suggest at least these features of the claimed invention.

Accordingly, Applicant respectfully submits that independent claim 1 and claims 2-6, which depend therefrom are allowable over the cited references.

The Applicant also respectfully submits that independent claim 7 as amended is allowable over the cited art in that claim 7 recites a combination of elements including, for

example "at least some of said re-melting of said upper portion of said polycrystalline silicon layer is performed as said amorphous silicon layer is melted." None of the cited references including Kuwabara, singly or in combination, teaches or suggest at least these features of the claimed invention. Accordingly, Applicant respectfully submits that independent claim 7 and claims 8-12, which depend therefrom are allowable over the cited references.

Applicant believes the foregoing amendments place the application in condition for allowance and early, favorable action is respectfully solicited. Should the Examiner deem that a telephone conference would further the prosecution of this application, the Examiner is invited to call the undersigned attorney at (202) 496-7500.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136. Please credit any overpayment to deposit Account No. 50-0911.

Respectfully submitted,

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MARKED UP VERSION OF THE AMENDED SPECIFICATION

Page 3, Paragraph beginning at line 12 of the substitute specification filed February 23, 2001:

FIGS. 1A [and]to [1B]1C are plan views illustrating a crystallization process of a polycrystalline silicon layer. The distance between adjacent silicon seeds 11 is less than the maximum grain growth distance. It is desirable that the silicon seeds 11 are uniformly distributed. The silicon grains 13 grow laterally, centering on the silicon seed 11, and complete their growth after forming grain boundaries 15.

Page 7, Paragraph beginning at line 9 of the substitute specification filed February 23, 2001:

Figs. 1A to [1B] 1C are plan views illustrating a typical crystallization process of a polycrystalline silicon layer.

MARKED UP VERSION OF THE AMENDED CLAIMS

1. (Amended) A method of forming a polycrystalline silicon layer, comprising:

forming an amorphous silicon layer on a substrate;

[a first step of]melting [completely] the amorphous silicon layer using a laser beam
thereby forming the polycrystalline silicon layer by adopting a mask; and

[a second step of]melting an upper portion of the polycrystalline silicon layer using
the laser beam by adopting the mask thereby recrystallizing the upper portion of the
polycrystalline silicon layer[.],

wherein at least some of said melting of said upper portion of said polycrystalline
silicon layer is performed as said amorphous silicon layer is melted.

7. (Amended) A method of forming a polycrystalline silicon layer, comprising:

forming an amorphous silicon layer on a substrate;

melting said amorphous silicon layer using a laser beam so as to form a polycrystalline silicon layer; and

re-melting an upper portion of said polycrystalline silicon layer using a laser beam so as to re-crystallize said upper portion[.],

wherein at least some of said re-melting of said upper portion of said polycrystalline silicon layer is performed as said amorphous silicon layer is melted.